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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,227	09/08/2003	Soichiro Ogawa	50340-156	1064

7590 06/02/2009
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Washington, DC 20005-3096

EXAMINER

ECHELMMEYER, ALIX ELIZABETH

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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06/02/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/656,227	Applicant(s) OGAWA, SOICHIRO	
	Examiner Alix Elizabeth Echelmeyer	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed April 6, 2009. Claims 15 and 18 have been amended. Claims 15-25 are pending and are rejected finally for the reasons given below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 15-23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugita et al. (US 6,455,179) in view of Tanaka et al. (US 6,803,142) and Rock (US 7,045,245).

Regarding claims 15 and 18, Sugita et al. teach a fuel cell system for use in a vehicle (abstract, column 1 lines 5-6). The fuel cell system has two fuel cell stacks having stacks of fuel cells with end plates at both ends (16, 24) (Figures 1 and 2). Stacking bolts (154) maintain the cells in a stack (Figure 2).

Sugita et al. teach brackets to hold the fuel cell system to the vehicle (168 of Figure 2). There are bolts within the brackets that are perpendicular to the fixed direction of the fuel cell stack (170a in Figure 2).

As for claims 17 and 25, Sugita et al. further teach rubber mounts for the brackets that attach the fuel cell to the vehicle (column 6 lines 65-67).

With further regard to claim 18, Sugita et al. teach a fluid supply/discharge block (28) (column 5 line 53 - column 6 line 26).

Regarding claim 19, Sugita et al. teach end plates (24), one at one end of the stack and a second attaching the piping mechanism to the stack. Between the attachment plate and the end plate (24) is gap containing springs, which serve to tighten the stack (column 6 lines 27-39). One of ordinary skill in the art at the time the invention was made would recognize that springs, by their nature, would allow for expansion of the stack.

As for claims 20 and 21, Sugita et al. fail to teach the depression, projection, and seal within the expansion/contraction mechanism, which for the purposes of examination will be interpreted to be the fluid supply block, second plate, first plate and springs, since the mechanism would not function as claimed without these components. One of ordinary skill in the art would recognize that the expansion/contraction mechanism of Sugita et al. would inherently have a projection connecting the fluid supply block with the fuel cell, since without such a connection fuel could not be provided to or removed from the fuel cell stack. Further, a seal would be necessary or at the very least obvious in order to prevent leakage. As long as there is attachment between the fluid supply/discharge block and the stack, the structure of Sugita et al. would function as the structure of the instant invention does. A depression would be

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inherent in order to provide a place for the projection to connect the stack and the fluid supply/discharge block.

With regard to claim 22, Sugita et al. teach that the end plates are conductive (abstract).

As for claim 23, Sugita et al. teach two stacks arranged in parallel and electrically connected, with a fluid supply/discharge block attached to both stacks, but fail to teach whether the stacks are electrically connected in parallel or series (Figure 1, column 9 line 49 - column 10 line 24). It would have been obvious to one having ordinary skill in the art at the time the invention was made attach the stacks in series if it was desired to maximize voltage produced by the system.

Sugita et al. fail to teach a case and that the bolts holding the fuel cell stack to the vehicle penetrate an end plate and the case.

Tanaka et al. teach a fuel cell having a housing case (10) that provides mounts (123, 130) for fixing the end plates of the fuel cell and case using bolts (104) (abstract). The bolts are electrically insulated (125) (column 3 lines 22-31).

Tanaka et al. further teach that the mounts give the housing structure that allows it to withstand the load concentration on the mount (column 4 lines 1-4).

It would be desirable to use a case such as the housing case of Tanaka et al. in the fuel cell of Sugita et al. since the case would provide protection to the fuel cell from the outside environment. Further, it would be desirable to use the mounts of Tanaka et al. with the mounts of Sugita et al. to attach the case to the end plates of the fuel cell

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and attach the encased fuel cell to the vehicle, since the configuration of the mounts of Tanaka et al. allow the case to withstand the load concentration on the mount and the mounts of Sugita et al. attach the fuel cell system to the vehicle.

With further regard to claim 18, it would be desirable for the bolts (166 a, b) of Sugita et al. to penetrate the supply block instead of a bracket since it would provide more support for the fuel cell system by changing the load concentration, as Tanaka et al. teach the importance of load concentration. By supporting the fuel cell of Sugita et al. at the supply block, the supply block would have more support than with the use of the brackets, which would be desirable to protect the piping mechanisms that could be carrying volatile reactants such as pure hydrogen.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a case for the fuel cell of Sugita et al. such as taught by Tanaka et al. since the case would provide protection to the fuel cell from the outside environment. It would also have been obvious to one having ordinary skill in the art at the time the invention was made to use the mounts of Tanaka et al. with the mounts of Sugita et al. to attach the case to the end plates of the fuel cell and attach the encased fuel cell to the vehicle, since the configuration of the mounts of Tanaka et al. allow the case to withstand the load concentration on the mount and the mounts of Sugita et al. attach the fuel cell system to the vehicle.

Sugita et al. in view of Tanaka et al. fail to teach that both ends of the bolt are located exterior to the case.

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Rock teaches a fuel cell stack having two end plates (45, 58) which are attached to the case, or side walls (36) by bolts, or threaded fasteners (80) (Figure 2; column 5 lines 39-41, 50-54; column 6 lines 24-28).

Rock teaches that the bolts are used on both sides of the end plate, parallel to the plates within the fuel cell stack, in order to secure the case to the end plates (column 6 lines 24-28).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the bolts for fixing the end plate to the case of Sugita et al. in view of Tanaka et al. on both sides of the end plate such as taught by Rock in order to secure the case to the end plates. The skilled artisan would recognize that bolts on both sides of the end plate, such as in Rock, would result in more secure fastening of the end plates to the case.

Sugita et al. in view of Tanaka et al. and Rock fail to teach that the bolts on either side of the end plate are a single bolt, such that both ends of the bolt are located on the exterior of the case.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the two bolts on either side of the end plate, such as seen in Figure 2 of Rock, into a single bolt extending through the end plate and thus having both ends of the bolt located on the exterior of the case, since such a modification would involve fewer parts and allow for better securing of the case to the fuel cell stack.

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It has been held that forming in one piece an article which was formerly formed in two pieces involves only routine skill in the art. MPEP 2144.04 (VB).

4. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugita et al. in view of Tanaka et al. and Rock as applied to claim 19 above, and further in view of Groppel (US 3,856,573).

The teachings of Sugita et al., Tanaka et al. and Rock as discussed above are incorporated herein.

Sugita et al. in view of Tanaka et al. and Rock fail to teach that the fluid supply/discharge block is made of an electrically nonconductive material.

Groppel teaches plastic channels for supply and discharge of reactants to a fuel cell (column 4 lines 9-13).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use plastic channels as the piping materials of Sugita et al., since plastic materials would be more resistant to chemical wear by harsh chemicals that develop in fuel cell systems.

Response to Arguments

5. Applicant's arguments with respect to claims 15 and 18 have been considered but are moot in view of the new grounds of rejection, see above. The new grounds of rejection are necessitated by the amendment.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795

Alix Elizabeth Echelmeyer
Examiner
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aee